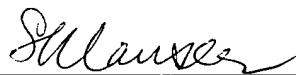




IFW
Docket No. 054030-0066

UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : ABBOTT, *et al.*
Application No. : 10/711,517
Filing Date : September 23, 2004
Group Art Unit : 1641
Confirmation No. : 5516
Examiner : Christine E. Foster
For : USING LIQUID CRYSTALS TO DETECT AFFINITY
MICROCONTACT PRINTED BIOMOLECULES

Mail Stop Amendment Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	CERTIFICATE OF TRANSMISSION/MAILING
	I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on the date shown below or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on January 25, 2006.
	
	Signature
	Stephanie Klauser
	Typed or Printed Name

INFORMATION DISCLOSURE STATEMENT

Sir:

This Information Disclosure Statement is submitted:

☐ under 37 CFR 1.129(a), or
(First/Second submission after Final Rejection)

☐ under 37 CFR 1.97(b), or
(Within any one of the following time periods: three months of filing national application (other than a CPA) or date of entry of the national stage in an international application; or before the mailing date of a first office action on the merits in a non-provisional application, including a CPA, or a Request for Continued Examination).

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- ☒ under 37 CFR 1.97(c) together with either:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, or
- ☒ a \$180.00 fee under 37 CFR 1.17(p), or
- (More than 3 months after receipt of the International Search Report, but before final action or notice of allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with:
- ☐ a Statement under 37 CFR 1.97(e), as checked below, and
- ☐ a \$180.00 fee under 37 CFR 1.17(p), or
- (Filed after final action or notice of allowance, whichever occurs first, but on or before payment of the issue fee)
- ☐ under 37 CFR 1.97(i):
- Applicant requests that the IDS and cited reference(s) be placed in the application filewrapper.
- (Filed after payment of issue fee)

Statement Under 37 CFR 1.97(e)

- ☐ Each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement; or
- ☐ No item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the undersigned, after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of this Information Disclosure Statement.

Statement Under 37 CFR 1.704(d) (Patent Term Adjustment)

Applies to original applications (other than design) filed on or after May 29, 2000

- ☐ Each item of information contained in the Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application and this communication was not received by any individual designated in § 1.56(c) more than thirty days prior to the filing of the Information Disclosure Statement.

Enclosed herewith is Substitute for Form 1449/PTO:

- ☒ Copies of the cited references are enclosed.
- ☐ In accordance with 37 C.F.R. § 1.98 (d), copies of cited references (*list reference not enclosed*) are not enclosed as these references were entered in earlier application, U.S. Application No. [], to which the present application claims priority under 35 U.S.C. 120. The earlier application contains copies of the cited references.

- ☐ If copies of references [] would benefit the Examiner of this case, the Examiner is invited to call the undersigned attorney and copies will be forwarded immediately.
- ☐ Listed references [] were cited in the enclosed International Search Report in a counterpart foreign application.

Concise Explanation Requirement (non-English references):

- ☐ The "concise explanation" requirement (non-English references) for reference AM under 37 CFR 1.98(a)(3) is satisfied by:
- ☐ the explanation provided on the attached sheet.
 - ☐ the explanation provided in the Specification.
 - ☐ submission of the enclosed International Search Report.
 - ☐ the enclosed English language abstract.

- ☐ Applicant requests that the following pending applications be considered:

Examiner's
Initials

- _____ U.S. Patent Application No. [], Publication No. [], Publication Date [],
by [inventor(s)], filed [], Docket No.: []
- _____ U.S. Patent Application No. [], Publication No. [], Publication Date [],
by [inventor(s)], filed [], Docket No.: []
- _____ U.S. Patent Application No. [], Publication No. [], Publication Date [],
by [inventor(s)], filed [], Docket No.: []

Examiner

Date

- ☐ A copy of each above-cited application, including the current claims, is enclosed.
- ☐ A copy of each above-cited application, including the current claims, is enclosed, except those entered in prior application, U.S. Application No. [], to which priority under 35 U.S.C. 120 is claimed.

The Examiner is requested to return a copy of the above list of pending applications indicating which references were considered with the next office communication.

It is requested that the information disclosed herein be made of record in this application.

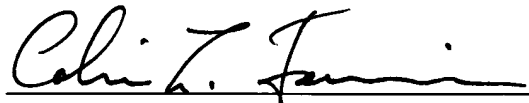
Method of payment:

- ☐ A check for the fee noted above is enclosed, or the fee has been included in the check with the accompanying Reply. A copy of this Statement is enclosed.
- ☒ Please charge Deposit Account No. 07-1509 in the amount of \$180.00. A copy of this Statement is enclosed.
- ☒ Please charge any deficiency in fees and credit any overpayment to Deposit Account No. 07-1509.

Dated this 25th day of January, 2006.

Respectfully submitted,

GODFREY & KAHN, S.C.



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PTO/SB/21 (09-04)

Approved for use through 07/31/2006. OMB 0651-0031

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**TRANSMITTAL
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

184

Application Number

10/711,517

Filing Date

September 23, 2004

First Named Inventor

Nicholas L. ABBOTT

Art Unit

1641

Examiner Name

Christine E. Foster

Attorney Docket Number

054030-0066

ENCLOSURES

(Check all that apply)

<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to TC
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation	<input type="checkbox"/> Status Letter
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<input checked="" type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> Request for Refund	Copies of 45 references
<input type="checkbox"/> Certified Copy of Priority Document(s)	<input type="checkbox"/> CD, Number of CD(s) _____	Return postcard
<input type="checkbox"/> Reply to Missing Parts/Incomplete Application	<input type="checkbox"/> Landscape Table on CD	
<input type="checkbox"/> Reply to Missing Parts under 37 CFR 1.52 or 1.53	Remarks	

Note: This paper includes an authorization to charge for entry of an IDS.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	Godfrey & Kahn, S.C.		
Signature			
Printed name	Colin L. Fairman		
Date	January 25, 2006	Reg. No.	51,663

CERTIFICATE OF TRANSMISSION/MAILING

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Signature			
Typed or printed name	Stephanie Klauser	Date	January 25, 2006

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



Substitute For Form 1449/PTO INFORMATION DISCLOSURE CITATION IN AN APPLICATION (January 25, 2006) (Use several sheets if necessary)				ATTORNEY DOCKET NO. 054030-0066		APPLICATION NO. 10/711,517	
				APPLICANT Nicholas L. ABBOTT, <i>et al.</i>			
				FILING DATE September 23, 2004		GROUP ART UNIT 1641	
U.S. PATENT DOCUMENTS							
EXAM- INER INI- TIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
		2005/0106562	May 19, 2005				
		2005/0079487	April 14, 2005				
		2005/0079486	April 14, 2005				
		2004/0161800	August 19, 2004				
		2003/0099993	May 29, 2003				
		2002/0028451	March 7, 2002				
		2001/0013294	August 16, 2001				
		2001/0004526	June 21, 2001				
		2002/0098364	July 25, 2002				
		2002/0004216	January 10, 2002				
		2002/0055093	May 9, 2002				
		2004/0091620	May 13, 2004				
		2002/0054188	May 9, 2002				
		2002/0142453	October 3, 2002				
		2002/0164604	November 7, 2002				
		6,858,423	February 22, 2005				
		6,852,285	February 8, 2005				
		6,849,321	February 1, 2005				
		6,797,463	September 28, 2004				
		6,692,699	February 17, 2004				
		6,623,107	September 23, 2003				
		6,600,076	July 29, 2003				
		6,596,346	July 22, 2003				
		6,537,499	March 25, 2003				

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EXAM- INER INI- TIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB- CLASS	FILING DATE IF APPROPRIATE
		6,364,459	April 2, 2002				
		6,288,392	September 11, 2001				
		6,284,392	September 4, 2001				
		6,284,197	September 4, 2001				
		6,096,386	August 1, 2000				
		6,047,095	April 4, 2000				
		6,171,802	January 9, 2001				
		4,597,942	July 1, 1986				
		4,513,034	April 23, 1985				
		4,902,106	February 20, 1990				
		5,658,491	August 19, 1997				
		5,677,195	October 14, 1997s				
		5,854,864	December 29, 1998				
FOREIGN PATENT DOCUMENTS							
		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUB- CLASS	TRANSLATION YES NO
		WO 1997/32202	September 4, 1997		6		
		WO 1994/03496	February 17, 1994		5		
		WO 1998/04652	February 5, 1998		6		
		WO 1997/33737	September 18, 1997		6		
		WO 1997/35198	September 25, 1997		6		
		WO 1999/063329	December 9, 1999		7		

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
1.	Bernard, A., <i>et al.</i> , "Printing Patterns of Proteins," <i>Langmuir</i> 1998, 14(9), 2225-2229.		
2.	Bernard, A., <i>et al.</i> , "Microcontact Printing of Proteins," <i>Adv. Mater.</i> 2000 12:1067-1070.		
3.	Bernard A., <i>et al.</i> , "Affinity capture of proteins from solution and their dissociation by contact printing," <i>Nat Biotechnol</i> 2001 19:866-869.		
4.	Brake, J.M. and Abbott, N. L., "An Experimental System for Imaging the Reversible Adsorption of Amphiphiles at Aqueous-Liquid Crystal Interfaces" <i>Langmuir</i> 2002 18:6101-6109.		
5.	Charych D.H., <i>et al.</i> , "Direct colorimetric detection of a receptor-ligand interaction by a polymerized bilayer assembly." <i>Science</i> 1993 261(5121):585-588. Erratum in: <i>Science</i> 1993 261(5127):1375		
6.	Cornell, B.A., <i>et al.</i> , "A biosensor that uses ion-channel switches." <i>Nature</i> 1997 387(6633):580-3.		
7.	Dancil, K.S., <i>et al.</i> , "A Porous Silicon Optical Biosensor: Detection of Reversible Binding of IgG to a Protein A-Modified Surface." <i>J. Am. Chem. Soc.</i> 1999 121:7925-7930.		
8.	Dulcey, <i>et al.</i> "Deep UV photochemistry of chemisorbed monolayers: patterned coplanar molecular assemblies." <i>Science</i> . 1991 252(5005):551-4.		
9.	Everitt, D.L., <i>et al.</i> , "Evolution of a preferred orientation of polycrystalline grains in obliquely deposited gold films on an amorphous substrate" <i>Physical Rev. B</i> 2000 62:R4833-4836.		
10.	Geary, J.M., <i>et al.</i> , "The mechanism of polymer alignment of liquid-crystal materials." <i>J. Appl. Phys.</i> 1987 62:4100-4108.		
11.	Geissler, M., <i>et al.</i> , "Microcontact-Printing Chemical Patterns with Flat Stamps." <i>J. Am. Chem. Soc.</i> 2000 122:6303-6304.		
12.	Gu, Y., <i>et al.</i> , "Anchoring of liquid crystals on surface-initiated polymeric brushes." <i>Chemphyschem.</i> 2002 3(5):448-51		
13.	Gupta, V.K. and Abbott, N. L., "Uniform Anchoring of Nematic Liquid Crystals on Self-Assembled Monolayers Formed from Alkanethiols on Obliquely Deposited Films of Gold" <i>Langmuir</i> 1996 12:2587-2593.		
14.	Gupta, V.K., <i>et al.</i> , "Optical amplification of ligand-receptor binding using liquid crystals." <i>Science</i> . 1998 279(5359):2077-2080.		
15.	Harnett, C.K., <i>et al.</i> , "Low-energy electron-beam patterning of amine-functionalized self-assembled monolayers" <i>Appl Phys Lett</i> 2000 76:2466-2468.		
16.	Häussling, L.H. and Ringsdorf, H., "Biotin-functionalized self-assembled monolayers on gold: surface plasmon optical studies of specific recognition reactions." <i>Langmuir</i> 1991 7:1837-1840.		
17.	Hidber, P.C., <i>et al.</i> , "Microcontact Printing of Palladium Colloids: Micron-Scale Patterning by Electroless Deposition of Copper." <i>Langmuir</i> 1996 12:1375-1380.		

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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
18.	Houseman, B.T., <i>et al.</i> , "Maleimide-Functionalized Self-Assembled Monolayers for the Preparation of Peptide and Carbohydrate Biochips." <i>Langmuir</i> 2003 19:1522-1531.		
19.	Kim, S.R., <i>et al.</i> , "Orientations of liquid crystals on mechanically rubbed films of bovine serum albumin: a possible substrate for biomolecular assays based on liquid crystals." <i>Anal. Chem.</i> 2000 72(19):4646-4653.		
20.	Kim, S.R. and Abbott, N.L. "Manipulation of the Orientational Response of Liquid Crystals to Proteins Specifically Bound to Covalently Immobilized and Mechanically Sheared Films of Functionalized Bovine Serum Albumin" <i>Langmuir</i> 2002 18:5269-5276.		
21.	Kumar, A. and Whitesides, G.M., "Features of gold having micrometer to centimeter dimensions can be formed through a combination of stamping with an elastomeric stamp and an alkanethiol "ink" followed by chemical etching" <i>Appl. Phys. Lett.</i> 1993 63:2002-2004.		
22.	Kumar, A., <i>et al.</i> , "Patterning Self-Assembled Monolayers: Applications in Materials Science" <i>Langmuir</i> 1994 10:1498-1511.		
23.	Lahiri, J., <i>et al.</i> , Patterning Ligands on Reactive SAMs by Microcontact Printing. <i>Langmuir</i> 1999 15:2055-2060.		
24.	Lin, V., <i>et al.</i> , "A porous silicon-based optical interferometric biosensor." <i>Science</i> 1997 278(5339):840-3.		
25.	Luk, Y.Y., <i>et al.</i> , <i>Surface Science</i> , 2004.		
26.	Martin, B.D., <i>et al.</i> , "Fabrication and Application of Hydrogel Stampers for Physisorptive Microcontact Printing." <i>Langmuir</i> 2000 16:9944-9946.		
27.	Miller, W.J., <i>et al.</i> , "Planar anchoring of nematic 4- <i>n</i> -pentyl-4'-cyanobiphenyl on self-assembled monolayers formed from alkanethiols on gold." <i>Appl. Phys. Lett.</i> 1996 69(13):1852-1854.		
28.	Ouskova, E., <i>et al.</i> , "Photo-orientation of liquid crystals due to light-induced desorption and adsorption of dye molecules on an aligning surface." <i>Phys Rev E Stat Nonlin Soft Matter Phys.</i> 2001 64(5 Pt 1):051709. Epub 2001 <i>Phys. Rev. E</i> 2001 64:Art. No. 051709 Part 1.		
29.	Pan, J.J. and Charych, D., "Molecular Recognition and Colorimetric Detection of Cholera Toxin by Poly(diacetylene) Liposomes Incorporating G _{m1} Ganglioside" <i>Langmuir</i> 1997 13:1365-1367.		
30.	Renault, J.P., <i>et al.</i> , "Fabricating Arrays of Single Protein Molecules on Glass Using Microcontact Printing." <i>J. Phys. Chem. B</i> 2003 107:703-711.		
31.	Renault, J.P., <i>et al.</i> , "Fabricating microarrays of functional proteins using affinity contact printing." <i>Angew Chem. Int. Ed. Engl.</i> 2002 41(13):2320-3.E.		
32.	Shah, R.R. and Abbott, N.L., "Coupling of the Orientations of Liquid Crystals to Electrical Double Layers Formed by the Dissociation of Surface-Immobilized Salts." <i>J. Phys. Chem. B</i> 2001 105:4936-4950.		
33.	Shah, R.R. and Abbott, N.L., "Principles for Measurement of Chemical Exposure Based on Recognition-Driven Anchoring Transitions in Liquid Crystals." <i>Science</i> 2001 293:1296-1299.		

Substitute For Form 1449/PTO INFORMATION DISCLOSURE CITATION IN AN APPLICATION (January 25, 2006) (Use several sheets if necessary)		ATTORNEY DOCKET NO.	APPLICATION NO.
		054030-0066	10/711,517
		APPLICANT	
		Nicholas L. ABBOTT, <i>et al.</i>	
		FILING DATE	GROUP ART UNIT
		September 23, 2004	1641
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
34.	Shah, R.R. and Abbott, N.L., "Using Liquid Crystals To Image Reactants and Products of Acid-Base Reactions on Surfaces with Micrometer Resolution" <i>J. Am. Chem. Soc.</i> 1999 121:11300-10.		
35.	Skaife, J. J., <i>et al.</i> , "Influence of Nanometer-Scale Topography of Surfaces on the Orientational Response of Liquid Crystals to Proteins Specifically Bound to Surface-Immobilized Receptors" <i>Langmuir</i> 2001 17:5448-5457.		
36.	Starkey, C.A., <i>et al.</i> , "Evaluation of the Recombigen HIV-1 Latex Agglutination Test." <i>Clin Microbiol.</i> 1990 28(4):819-22.		
37.	Tan, J. L., <i>et al.</i> , "Microcontact Printing of Proteins on Mixed Self-Assembled Monolayers." <i>Langmuir</i> 2002 18:519-523.		
38.	Tercero Espinoza, L.A., <i>et al.</i> , "Orientational behavior of thermotropic liquid crystals on surfaces presenting electrostatically bound vesicular stomatitis virus." <i>Langmuir</i> 2004 20(6):2375-2385.		
39.	Tingey, M.L., <i>et al.</i> , "Imaging of affinity microcontact printed proteins by using liquid crystals." <i>Langmuir</i> 2004 3;20(16):6818-26.		
40.	Tingey, M.L., <i>et al.</i> , "Patterned Orientations of Liquid Crystals on Affinity Microcontact Printed Proteins," <i>Adv. Mater.</i> 2004 16(15):1331-1336.		
41.	Tsukruk, V.V. Rinderspacher and F. Bliznyuk, V.N., "Self-Assembled Multilayer Films from Dendrimers." <i>Langmuir</i> 1997 13:2171, 2171-2176.		
42.	Wanless, E.J. and Christenson, H.K., <i>J. Chem. Phys.</i> 1994 101:4260-4267.		
43.	Yan, L., <i>et al.</i> , "Patterning a Preformed, Reactive SAM Using Microcontact Printing" <i>J. Am. Chem. Soc.</i> 1998 120:6179-6180.		
44.	Yan, L., <i>et al.</i> , "Patterning Thin Films of Poly(ethylene imine) on a Reactive SAM Using Microcontact Printing." <i>Langmuir</i> 1999 15:1208-1214.		
45.	Yaroshchuk, O., <i>et al.</i> , "Three-dimensional orientational order in the bulk and on the surface of polymer films and its effect on liquid-crystal alignment." <i>Phys Rev E Stat Nonlin Soft Matter Phys.</i> 2004 69(1 Pt 1):011702. Epub 2004 Jan 27.		